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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/733,462

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Ki Uk Kyung

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EXAMINER

SHEETS, ELIJAH M

ART UNIT

PAPER NUMBER

2609

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	Application No. 10/733,462	Applicant(s) KYUNG ET AL.	
	Examiner Eli M. Sheets	Art Unit 2609	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 10 December 2003.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,2 and 5-10 is/are rejected.
- 7) ☒ Claim(s) 3 and 4 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 10 December 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date 12/10/2003.

- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

**SUPERVISORY PATENT EXAMINER**

## DETAILED ACTION

### *Drawings*

1. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned on page 2, lines 10-21 of the description: 12, 14, 40, 41, 42, 44, 46, 48, 50, 62, and 64. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

### *Claim Rejections - 35 USC § 103*

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in **Graham v. John Deere Co., 383 U.S. 1, 148 USPQ 459 (1966)**, that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows: (*See MPEP Ch. 2141*)

a. Determining the scope and contents of the prior art;

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- b. Ascertaining the differences between the prior art and the claims in issue;
- c. Resolving the level of ordinary skill in the pertinent art; and
- d. Evaluating evidence of secondary considerations for indicating obviousness or nonobviousness.

3. Claim 1, 2, 5-7, and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schena et al. (US 6,166,723, hereinafter referred to as Schena) in view of Gallery (US 5,973,689), and further in view of Gouzman et al. (US 5,912,660, hereinafter referred to as Gouzman).

Regarding claim 1, Schena discloses a mouse interface device, which is capable of providing force feedback to the user of the mouse system (haptic mouse interface system which provides force and tactile feedbacks) based on events occurring in a program implemented in a host computer (Col. 4, lines 40-45). The mouse is an object that is preferably grasped or gripped and manipulated by a user. By "grasp", it is meant that users may releasably engage a portion of the object in some fashion, such as by hand, with their fingertips, etc (to a user's hand and fingers). (Col. 4, lines 56-59). Host computer and/or interface provide force feedback signals (signals corresponding to a mechanical property in a first direction of the virtual object) to actuators coupled to interface, and the actuators generate forces on members of the mechanical portion of the interface to provide forces on mouse in provided or desired degrees of freedom (Col.5, lines 59-64). Schena also teaches a linkage (see Fig. 2b, parts 44, 46, 48 and 50), which is connected to first and second motors (64a and 64b), with shaft at a ground joint (see Fig. 4c, at point A), and connected at another joint (see Fig. 4c, at point D) to the mouse in order to provide the mechanical force feedback to the user's arm. In addition, Schena teaches that the linkage can be driven by a direct drive DC motor or a geared/belt DC motor to provide mechanical advantage (Col. 20, lines 17-19). In addition, Schena teaches that one or more (first, second, and third)

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sensors are coupled to the ground surface that detects movement of a member of the linkage and provides a sensor signal including information from which a position of the mouse object in the planar workspace can be determined (Col. 3, lines 12-16). Schena also discloses that these sensors can be digital encoders (Col. 3, line 31). Schena does not teach a third motor, third encoder, or a pair of finger pads provided at both sides of the mouse. However, Gallery teaches a mouse controller with a first actuator (finger pad) at the side of the mouse, which moves in and out to an extent and with a speed determined by the horizontal feedback force and impinges on the user's thumb, and that an actuator on the opposite side of the casing (pair, both sides of the mouse) will be required for left-hand operation. The force feedback of Schena is provided in the form of braking current applied to the windings of motors (third motor) to oppose the direction of rotation of friction wheels (Col. 7, lines 14-19 and 30-32). Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to combine the teachings of Schena and Gallery for the benefit of providing horizontal feedback force to the user (Col. 7, lines 16-17). However, neither Schena nor Gallery disclose a plurality of pins coupled to an actuator to come in contact with the user's fingers. Gouzman, however, discloses a mouse-like input/output device wherein the host computer transmits data representative of a portion of the computer's screen display (signals corresponding to surface properties of the virtual object), corresponding to the position of the mouse on the surface, via a cord to the mouse. The pins are moved up and down in accordance with those data (drives the plurality of pins according to the received signals), to provide a tactical representation (pressure or vibration exhibiting the surface properties of the virtual object) of the data that is felt by the user via fingertip (to the user's fingers) (Col. 4, lines 15-20). It would have been obvious to one of ordinary skill in the art at the

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time of invention to combine the teachings of Schena, Gallery, and Gouzman for the benefit of allowing a blind user to feel a tactile representation of data being displayed on a screen, just as a sighted user can see that information (Col. 2, lines 45-47).

Regarding claim 2, Schena further discloses that in alternate embodiments, capstan drive mechanisms can be provided to transmit forces and motion between electromechanical transducers and the mouse (Col. 13, lines 49-51). Capstan drive systems are a well-known in the art to include cables wound around a drive shaft in order to transfer a rotational movement to a linear movement.

Regarding claim 5, Schena discloses a linkage (as is seen in Fig. 2b), comprised of four bars (44, 46, 48, and 50) connected hingedly at the end portions (52 and 58), and the bars (44 and 48) connected to the first joint (52) are connected to the shafts of the driving motors (not shown, see capstan drive mechanisms embodiment in claim 2 rejection), and the other two bars (46 and 50) are connected to a second hinge point (58), which is diagonally opposite the first hinge point (52) and connects to the mouse (Fig. 3c, point D).

Regarding claim 6, Schena discloses a grounded pad to provide additional support for the mouse (Col. 8, lines 55-57). Calling attention to Schena Fig. 3a, the pad is located between the mouse (attached to 59) and the linkage (40), and is attached to the motor assembly (first force feedback unit) (26). In addition, the plate is located in an area that is well known in the art to be a resting place for a hand or a wrist while using the mouse.

Regarding claim 7, Schena discloses an opening (communication hole) in the top surface (mouse plate), which may be made any size desired, including larger than the workspace of the

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mouse (Col. 15, lines 50-51). Also, as can be seen in Schena Fig. 3a, the second hinge point (58), which connects physically to the mouse, extends through the hole (76).

Regarding claim 10, Gouzman teaches, in Fig. 1B, that the pins (22) coupled to the actuator are arranged such that the free ends (top ends) are positioned at the same plane.

4. Claims 8 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schena et al. (US 6,166,723, hereinafter referred to as Schena) in view of Gallery (US 5,973,689), and further in view of Gouzman et al. (US 5,912,660, hereinafter referred to as Gouzman) and Nakajima et al. (US 5,226,817, hereinafter referred to as Nakajima).

Regarding claim 8 and 9, Nakajima discloses a braille cell comprising plural piezoelectric element reeds (plurality of plate-shaped actuators) which are bent at the front ends thereof when a DC voltage is applied to them (which can be bent upon its activation), a base body (holding base) to which the piezoelectric element reeds are fixed at the base ends thereof through a printed circuit board which supports (actuators being sequentially attached to) the piezoelectric element reeds piled like steps (having a plurality of steps) at a certain interval, and tactile pins provided on corresponding free ends of the respective piezoelectric element reeds (Col. 1, line 63 to Col. 2, line 3).

***Allowable Subject Matter***

5. Claims 3 and 4 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

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The prior art made of record fails to anticipate or make obvious the claimed subject matter of claims 3 and 4. Specifically, the prior art fails to suggest, in combination with the remaining claimed elements, a finger pad comprising a pin head with a slit and a guide groove, wherein cables surround the finger pad through the guide groove (recited in claim 3). In addition, the prior art fails to suggest wherein the finger pads include a bolt tightened into a threaded hole of the pin head, which includes a tension bar, whereby the tension bar is moved close to and away from the pin head when the bolt is tightened and loosened (recited in claim 4).

### **Contact**

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Eli Sheets whose telephone number is (571) 270-1189. The examiner can normally be reached on M-F 8:30-6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vu Le can be reached on (571) 272-7332. Customer Service can be reached at (571) 272-2600. The fax number for the organization where this application or proceeding is assigned is (571) 273-7332.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

**VU LE**  
**SUPERVISORY PATENT EXAMINER**